

What is claimed is:

1. A dust collecting apparatus for a vacuum cleaner, comprising:

a cyclonic chamber having an air inlet fluidly connected to a first conduit which is fluidly connected to a suction brush of a cleaner body, and a first air outlet, wherein the cyclone chamber imparts cyclonic spin on contaminant-laden air drawn through the air inlet;

a dust receptacle removably connected to the cyclonic chamber for receiving a contaminant which is thrown out from the spinning contaminant-laden air by centrifugal force;

a grill assembly disposed inside the cyclonic chamber and on an upstream side of the air outlet for preventing the thrown out contaminant from flowing backwards through the first air outlet; and

a filter assembly formed at an outer side of the cyclonic chamber for filtering out the contaminant being discharged to the air outlet, the filter assembly comprising:

a filter member,

a filter frame receiving the filter member therein, and having a second air outlet corresponding to the first air outlet of the cyclonic chamber,

and a third air outlet fluidly connected with a second conduit which is fluidly connected to an air driving source, and

a cover removably connected to the filter.

2. The dust collecting apparatus of claim 1, further comprising a plurality of first support projections formed along an inner surface of a lower portion of the filter frame, for causing the incoming air from the second air outlet to be evenly distributed over the filter member.

3. The dust collecting apparatus of claim 1, further comprising a plurality of second support projections formed along an inner surface of an upper portion of the cover, for directing air

from the filter member to flow through the third air outlet and also for supporting the filter member in cooperation with the first support projections.

4. The dust collecting apparatus of claim 3, wherein free ends of the first and the second support projections are rounded.

5. The dust collecting apparatus of claim 1, wherein the cover is connected to the filter frame by a rotatable connecting means.

6. The dust collecting apparatus of claim 5, wherein the rotatable connecting means comprises:

at least one connecting groove formed on the upper side of the filter frame, having one open side in the rotation direction of the cover; and

at least one connecting projection formed on the cover in a radial direction for inserting in the open side of the connecting groove.

7. The dust collecting apparatus of claim 6, wherein the cover comprises a grip, for rotating the cover and connecting the cover to the filter frame.

8. The dust collecting apparatus of claim 1, wherein the filter frame is removably fastened to the upper side of the cyclonic chamber.

9. The dust collecting apparatus of claim 1, wherein the filter frame is integrally formed with the upper side of the cyclonic chamber.

10. The dust collecting apparatus of claim 1, wherein the grill assembly comprises:

a grill body;

a plurality of louvers formed on the outer circumference of the grill body at an acute angle

with respect to the streamline of the spinning air; and

a dust blocking member formed at an upstream end of the grill body, for deflecting the contaminant toward the spinning air.

11. The dust collecting apparatus of claim 10, wherein the upper side of the grill body includes a screw hole for screw-fastening the grill body to the cyclonic chamber.

12. The dust collecting apparatus of claim 11, wherein the lower side of the filter frame includes a screw hole corresponding to the screw hole on the upper side of the grill body,

whereby the grill body, the cyclonic chamber and the filter frame are screw-fastened to each other, integrally.

13. The dust collecting apparatus of claim 10, wherein the dust blocking member is integrally formed with the grill body.

14. The dust collecting apparatus of claim 10, wherein the dust blocking member comprises:
a first conical member secured to the grill body and increasing in diameter towards the lower portion of the first conical member; and

a second cylindrical member connected to the first conical member and extending downwardly from the first conical member to a predetermined depth.

15. The dust collecting apparatus of claim 14, wherein the first conical member and the second cylindrical member are integrally formed with each other.

16. A dust collecting apparatus for a cyclone type vacuum cleaner, comprising:
a cyclonic chamber having an air inlet fluidly connected to a first conduit which is fluidly connected to a suction brush of a cleaner body, and a first air outlet, wherein the cyclone chamber imparts a cyclonic spin on a contaminant-laden air drawn thereto through the air inlet;

a dust receptacle removably connected to the cyclonic chamber for receiving a contaminant which is thrown out from the spinning contaminant-laden air by centrifugal force;

a grill assembly disposed inside the cyclonic chamber and on an upstream side of the air outlet for preventing the thrown out contaminant from flowing backwards through the first air outlet;

a main filter assembly removably connected to the inside of the grill assembly, for filtering out the contaminant being discharged to the grill assembly; and

a supplementary filter assembly formed at an outer side of the cyclonic chamber, for re-filtering out the contaminant flowing in through the first air outlet.

17. The dust collecting apparatus of claim 16, wherein the main filter assembly comprises:

a main filter member for filtering the contaminant backflowing from the grill assembly;

a main filter support having a plurality of frames for supporting the main filter member; and

a dust blocking member disposed at a lower end of the main filter support, for deflecting the contaminant in the grill assembly-headed air towards the spinning air.

18. The dust collecting apparatus of claim 17, wherein the main filter member is formed of a washable material.

19. The dust collecting apparatus of claim 17, wherein the main filter member includes folds for increasing the contact area with the incoming air through the grill assembly.

20. The dust collecting apparatus of claim 19, wherein the folds of the main filter member are formed in a lengthwise direction relative to the axis of the main filter member.

21. The dust collecting apparatus of claim 18, wherein the main filter member is formed of polyester.

22. The dust collecting apparatus of claim 17, wherein the dust blocking member comprises:

- a first conical member secured to the main filter member and increasing in diameter towards the lower portion of the first conical member; and
- a second cylindrical member extending downwardly from the first conical member to a predetermined depth.

23. The dust collecting apparatus of claim 22, wherein the first conical member and the second cylindrical member are integrally formed with each other.

24. The dust collecting apparatus of claim 17, wherein the grill assembly comprises;

- a grill body, having an upper side removably connected to the upper side of the cyclonic chamber and a lower side sealingly supported on the dust blocking member; and
- a plurality of louvers formed on the outer circumference of the grill body at an acute angle with respect to the streamline of the spinning air.

25. The dust collecting apparatus of claim 24, wherein the upper side of the grill body includes a screw hole for screw-fastening the grill body to the cyclonic chamber.

26. The dust collecting apparatus of claim 17, wherein the supplementary filter assembly comprises:

- a supplementary filter member;
- a supplementary filter frame receiving the supplementary filter member therein, and having a second air outlet corresponding to the first air outlet of the cyclonic chamber, and a third air outlet fluidly connected to a second conduit which is fluidly connected to an air driving source; and
- a cover removably connected to the upper side of the supplementary filter frame.

27. The dust collecting apparatus of claim 24, wherein the supplementary filter assembly comprises:

a supplementary filter member;

a supplementary filter frame receiving the supplementary filter member therein, and having a second air outlet corresponding to the first air outlet of the cyclonic chamber, and a third air outlet fluidly connected to a second conduit which is fluidly connected to an air driving source; and

a cover removably connected to the upper side of the supplementary filter frame.

28. The dust collecting apparatus of claim 26, further comprising a plurality of first support projections formed along an inner surface of a lower portion of the filter frame, for causing the incoming air through the second air outlet to be evenly distributed over the supplementary filter member.

29. The dust collecting apparatus of claim 28, further comprising a plurality of second support projections formed along an inner surface of an upper portion of the cover, for directing air from the supplementary filter member to flow through the third air outlet and also for supporting the supplementary filter member in cooperation with the first support projections.

30. The dust collecting apparatus of claim 29, wherein the cover is connected to the supplementary filter frame by a rotatable connecting means.

31. The dust collecting apparatus of claim 30, wherein the rotatable connecting means comprises:

at least one connecting groove formed on the upper side of the filter frame, having one open side in the rotation direction of the cover; and

at least one connecting projection formed on the cover in a radial direction for inserting in the open side of the connecting groove.

32. The dust collecting apparatus of claim 31, wherein the cover comprises a grip for rotating the cover and connecting the cover to the filter frame.

33. The dust collecting apparatus of claim 29, wherein the supplementary filter frame is removably fastened to the upper side of the cyclonic chamber.

34. The dust collecting apparatus of claim 29, wherein the supplementary filter frame is integrally formed with the upper side of the cyclonic chamber.

35. The dust collecting apparatus of claim 33, wherein,
the upper side of the grill body includes a screw hole for a screw-fastening with the cyclonic chamber,

the upper side of the main filter support portion includes a screw hole corresponding to the screw hole on the grill body,

the lower side of the supplementary filter frame includes a screw hole corresponding to the screw hole on the upper side of the grill body, and

the grill body, the main filter support portion, the cyclonic chamber and the supplementary filter frame are screw-fastened to each other, integrally.

36. The dust collecting apparatus of claim 16, wherein the grill assembly comprises:
a grill body;
a plurality of louvers formed on the outer circumference of the grill body at an acute angle with respect to the streamline of the spinning air; and

a dust blocking member formed at an upstream end of the grill body, for deflecting the contaminant toward the spinning air.

37. The dust collecting apparatus of claim 36, wherein the main filter assembly comprises:
a main filter member for filtering the contaminant backflowing from the grill assembly; and
a main filter support having a plurality of frames for supporting the main filter member, and sealingly supported on the dust blocking member of the grill assembly.

38. The dust collecting apparatus of claim 37, wherein the grill assembly and the main filter assembly are integrally formed with each other.

39. The dust collecting apparatus of claim 38, wherein, the upper side of the grill body includes a screw hole for screw-fastening to the cyclonic chamber.

40. The dust collecting apparatus of claim 39, wherein,
the upper side of the grill body includes a screw hole for screw-fastening to the cyclonic chamber,

the lower side of the supplementary filter frame includes a screw hole corresponding to the screw hole of the upper side of the grill body, and

the grill body integrally formed with the main filter assembly, the cyclonic chamber and the supplementary filter frame are screw-fastened with each other.

41. The dust collecting apparatus of claim 40, wherein the dust blocking member comprises:

a first conical member secured to the grill body and increasing in diameter towards the lower portion of the first conical member; and

a second cylindrical member connected to the first conical member and expending downwardly from the first conical member to a predetermined depth.